
Report to the State Water Resources Control Board On Water Conservation

**Permits 12947A, 12949, 12950, and 16596
(Applications 12919A, 15736, 15737, and 19351)**



Prepared by

**Sonoma County Water Agency
404 Aviation Blvd
Santa Rosa, CA 95403**



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I. Introduction

This report responds to the requests for information in the February 2, 2005 letter from Steven Herrera, Chief of the Water Rights Permitting Section of the State Water Resources Control Board's (SWRCB) Division of Water Rights.

II. Background

A. Past Water Conservation Actions

The Sonoma County Water Agency's eight principal contractors (the Cities of Cotati, Petaluma, Rohnert Park, Sonoma and Santa Rosa, and the Forestville, North Marin and Valley of the Moon Water Districts) first adopted a coordinated water conservation action plan in December 1981. Under this plan, each contractor was responsible for developing and implementing water conservation initiatives in the areas of consumer education, leak detection, water pricing, water-saving devices for new and existing developments, improving irrigation efficiencies, water-conserving landscapes and water conservation ordinances. A copy of this plan was included as an appendix to the Water Agency's 1984 Supplemental EIR for the Water Agency's proposed coordinated use of Lake Mendocino and Lake Sonoma, and a copy of this plan is attached to this report as Exhibit 1.

The February 1986 SWRCB Staff Analysis for the proposed changes in the Water Agency's Russian River Project water-right permits discussed the water contractors' coordinated water conservation action plan and recommended that the SWRCB require the Water Agency to prepare an overall water conservation plan for its service area and to submit this plan to the SWRCB. (See SWRCB Staff Analysis for Application 19351 (Unapproved Portion) and Petitions on Permitted Applications 12919A, 15736, 15737 and 19351, vol. I, p. 8 & vol. II, p. 49.)

In April 1986, the SWRCB adopted its water-rights Decision 1610 (D-1610). In D-1610, the SWRCB followed its staff's recommendation that the Water Agency be required to prepare and submit the recommended water conservation plan. Specifically, D-1610 added a term to the

Water Agency's water-right Permit 16596, which became term 21 of this permit. This term provides:

Permittee shall consult with the Division of Water Rights and develop and implement a master water conservation plan for its service area. The proposed plan shall be presented to the State Water Resources Control Board for approval within one year from the date of issuance of this amended permit or such further time as may, for good cause shown, be allowed by the Board. A progress report on the development of the master water conservation plan may be required by the Board at any time within this period. All cost effective measures identified in the master water conservation plan shall be implemented in accordance with the schedule for implementation found therein.

(See D-1610, p. 50.)

Following this requirement, the Water Agency prepared its 1987 Water Conservation Plan and submitted it to the SWRCB. Copies of the 1987 Plan and the Water Agency's November 24, 1987 letter transmitting it to the Division of Water Rights are attached to this report as Exhibit 2.

By letter dated March 17, 1988, Shige Okada, Chief of the Permit and License Unit of the SWRCB's Division of Water Rights, advised the Water Agency that its 1987 Plan met the requirements of term 21 of Permit 16596, and that the Division had approved the plan as submitted. A copy of Mr. Okada's letter is attached to this report as Exhibit 3. Since 1987, the Water Agency and its eight principal contractors have implemented the 1987 Water Conservation Plan and they have developed and implemented additional water conservation measures.

On May 19, 1998, the Water Agency approved its 1998 Water Conservation Plan. A copy of this plan is attached to this report as Exhibit 4. This plan describes the specific water conservation measures that each contractor will implement and the estimated water savings that will result from each of these measures. The estimated amounts of water savings for each measure for each contractor were based on the 1995 study by Montgomery Watson, "Water and Wastewater

Efficiency/Avoided Cost Study.” In this study, Montgomery Watson investigated each contractor’s service area to determine the cost-effectiveness of various new water conservation measures. The 1998 plan estimated total water conservation savings of 6,600 acre-feet per year by 2015. The 1998 Plan was approved by the Water Agency’s eight principal contractors and, in 2001, the Agency and its contractors amended their water supply agreement to require all contractors to implement the CUWCC water conservation best management practices (BMPs) and to require them to pay financial penalties to the Agency for any noncompliance. The Water Agency was the first wholesaler in the State of California to have all of its retail water agencies sign the California Urban Water Conservation Council (CUWCC) Memorandum of Understanding, under which each retail water agency commits to implement the CUWCC’s water conservation BMPs. In 1997, the Water Agency and its eight principal contractors amended their water supply agreement to specifically authorize the Agency to finance the costs of cost-effective water conservation measures through the charges that the water contractors pay the Agency for water.

In 2001, the Water Agency also completed its 2000 Urban Water Management Plan (UWMP), which covers the water supplies and demands of the Water Agency and its eight principal contractors. Copies of Chapter 9 and Appendices E and F of the 2000 UWMP (which address water conservation and water conservation BMPs) are attached to this report as Exhibit 5.

B. SWRCB Order 2004-0035-EXEC

Because the spring of 2004 was unusually dry, runoff into Lake Mendocino during this period was lower than normal and diversions from the Russian River during this period were higher than normal. As a result, Lake Mendocino storage levels were dropping below normal levels and these storage levels were predicted to reach such low levels during the fall of 2004 that the temperature of the water that would be released from Lake Mendocino could rise to levels that could be harmful to Chinook salmon in the Russian River. To avoid this potential harm, the Water Agency filed a petition in June 2004 to temporarily reduce the D-1610 instream-flow requirements. The requested reductions in instream-flow requirements were needed to maintain

storage levels in Lake Mendocino at high enough levels so that the temperature of water that would be released from Lake Mendocino during the fall of 2004 would not be harmful to Chinook salmon, and to reserve some of the water stored in Lake Mendocino that would be needed for Chinook salmon in 2005, if 2005 turned out to be a dry or critically dry year.

On July 26, 2004, SWRCB Chairman Arthur G. Baggett, Jr. approved SWRCB Order WR 2004-0035-EXEC. This order granted the Water Agency's petition to temporarily reduce the D-1610 instream-flow requirements. It also required the Water Agency to monitor fishery, temperature and water quality conditions in the Russian River, in consultation with fishery agencies, the Division of Water Rights and the North Coast Regional Board.

Although the Water Agency's petition for temporary changes in the D-1610 instream-flow requirements was not based on water supply concerns, and although Order WR 2004-0035-EXEC did not significantly affect the water supplies available for diversion from the Russian River at the Agency's Wohler-Mirabel diversion facilities, the order nevertheless required the Water Agency to prepare a water conservation status report and to present it to the SWRCB. Specifically, term 12 of the order provided:

SCWA shall prepare a Water Conservation Status Report for SCWA's service area and other areas served by Lake Mendocino. The report shall specify the water conservation measures being implemented in the areas served by Lake Mendocino, and shall specify the water savings resulting from the measures during the term of this temporary urgency change. The report shall estimate water conservation savings during future years. The report shall be presented to the SWRCB during a workshop to be scheduled in either October or November 2004. SCWA shall consult with the Division of Water Rights to determine scope and content of the report within 30 days of this order.

Following these directions, Water Agency staff prepared an outline of the proposed water conservation status report and transmitted it to the SWRCB staff for review. A copy of the August

27, 2004 e-mail memorandum from Matthew Damos, Water Agency Engineer, to Mr. Herrera is attached to this report as Exhibit 6. On August 31, 2004, Mr. Damos and Mr. Herrera discussed the outline by telephone and Mr. Herrera told Mr. Damos that the scope and content of the proposed report would satisfy State Board requirements. A copy of the September 1, 2004 e-mail memorandum from Mr. Damos to Mr. Herrera, confirming this conversation, is attached to this report as Exhibit 7.

On November 10, 2004, the Water Agency transmitted its Water Conservation Status Report to the SWRCB. Copies of the Water Agency's transmittal letter and the Water Conservation Status Report are attached to this report as Exhibit 8. This report is organized into the same sections as the sections listed in the outline that Mr. Damos transmitted to Mr. Herrera in August 2004. This report describes the implementation of the CUWCC's water conservation BMP's and other water conservation measures by the Agency's contractors, the contractors' recycled-water projects, and the Water Agency's and contractors' future water conservation measures and estimated savings. The report also briefly describes water conservation measures in other areas served by Lake Mendocino. On November 18, 2004, the Water Agency presented its Report to the SWRCB at a SWRCB workshop.

C. February 2, 2005 Request For Additional Information

During the November 18, 2004 workshop, some of the SWRCB members stated that the Water Agency's report did not provide all of the information that they wanted and that they wanted the Agency to submit additional information to the SWRCB. In a letter dated February 2, 2005, Mr. Herrera requested that the Water Agency return to a SWRCB workshop in the spring of 2005 with "a detailed plan of water conservation efforts that will offset future increases in demand, which in turn will result in no increase in Russian River diversions." This letter stated that the plan should include the following information, using the 2003 level of demand as a baseline:

1. Increases in demand projected to the year 2020 and broken down by source.

2. Proposed conservation methods to offset projected demand during the same period.
3. Estimated water savings from proposed conservation methods.
4. Estimated monetary costs of water conservation activities.
5. Source of financing for the conservation activities.

This letter also stated that the SWRCB was interested in receiving information that includes the “entire reach of the Russian River” and it asked the Water Agency to contact the Mendocino County Russian River Flood Control and Water Conservation Improvement District (the “Mendocino District”) about making a joint presentation to the SWRCB. Mr. Herrera’s letter indicated that a copy of it was sent to the Mendocino District. A copy of Mr. Herrera’s letter is attached to this report as Exhibit 9.

D. Water Agency Actions To Respond To SWRCB Request

The Water Agency received Mr. Herrera’s February 2, 2005 letter on February 14, 2005. Because the Water Agency did not have all of the water conservation information that was requested in Mr. Herrera’s letter, Jay Jasperse, one of the Water Agency’s Deputy Chief Engineers, sent letters on February 25, 2005 to all of the entities that receive water from the Agency’s water transmission system or that divert water under the Agency’s water rights, requesting information from them on water use, water conservation and recycled water use. Copies of Mr. Jasperse’s February 25 letter and the list of the people to whom this letter was sent are attached to this report as Exhibit 10. Because the Agency’s contractors use both Russian River water supplied by the Agency and water from other sources, including other surface water sources and groundwater, Mr. Jasperse’s letter asked for specific information about water from all of these sources.

The Water Agency received extensive data and information from the Cities of Cotati, Petaluma, Rohnert Park, Sonoma and Santa Rosa, the Town of Windsor, the Forestville Water District, the

North Marin Water District, the Valley of the Moon Water District and the Marin Municipal Water District. Substantial portions of the data and information in this report are compiled from the data and information provided by those entities in response to Mr. Jasperse's letter.

Because Mr. Herrera's February 2 letter also asked for information regarding water use and water conservation in the parts of the Russian River watershed that are not served by the Water Agency's contractors, Mr. Jasperse sent another letter to the major diverters and users of water in the Russian River watershed, requesting information about their water use and water conservation. Copies of Mr. Jasperse's March 2, 2005 letter and the list of the people to whom this letter was sent are attached to this report as Exhibit 11. In addition, because Mr. Herrera's February 2 letter had asked the Water Agency to contact the Mendocino District about making a joint presentation to the SWRCB, the Agency's water rights lawyer, Alan Lilly, wrote to Barbara Spazek, Executive Director of the Mendocino District, and Marc Del Piero, attorney for the Mendocino District, asking them to assemble and present to the SWRCB the requested information about the entities and individuals that divert water from the Russian River in Mendocino County. A copy of Mr. Lilly's March 10, 2005 letter is attached to this report as Exhibit 12.

There were three responses to these letters. First, in a letter dated March 7, 2005, the Willow County Water District's general manager stated that they would prefer to work with the Mendocino District on their response to the SWRCB's request. A copy of this letter is attached to this report as Exhibit 13. Second, in a letter dated March 21, 2005 from Ms. Spazek to Mr. Herrera, Ms. Spazek stated that she did not believe that the Mendocino District could produce any new information, and that they were "disinclined" to respond to the SWRCB's request. A copy of this letter is attached to this report as Exhibit 14. Third, in a letter dated April 1, 2005 (received by the Water Agency on April 7), Redwood Valley County Water District's attorney described Redwood Valley County Water District's water conservation efforts and transmitted a copy of the district's water conservation plan. Copies of this letter and plan are attached to this

report as Exhibit 36. Because the Water Agency did not receive any of the requested information regarding water use or water conservation in Mendocino County, except for the information from Redwood Valley, and because the Water Agency does not have any contracts with or authority over water users in Mendocino County, this report does not contain any information on water use or water conservation in Mendocino County besides the information in Exhibit 36.

Although the Water Agency promptly sent its requests for data and information to its contractors and although these contractors have been working with the Agency to provide the requested data and information, the process has taken some time, because the Agency must assemble and organize a large amount of detailed data and information. Also, the Agency had wanted to meet with the SWRCB staff to confirm that the Agency's draft report provides the information that the SWRCB desires, and, if necessary, to make appropriate changes to the draft report. For these reasons, in a letter dated March 17, 2004, Mr. Lilly wrote to Mr. Herrera, described the actions taken by the Water Agency in response to Mr. Herrera's February 2 letter and the Agency's efforts to assemble the information it had been provided to date into a report for the SWRCB. In this letter, Mr. Lilly asked the SWRCB to reschedule the workshop from April 5 until June 1, to give the Agency sufficient time to prepare its report and its oral presentation for the SWRCB workshop. A copy of Mr. Lilly's March 17 letter is attached to this report as Exhibit 15.

On March 30, 2005, Mr. Herrera sent a letter to Mr. Lilly, advising him that the SWRCB had scheduled the Water Agency's water conservation presentation for April 21, 2005 and requesting the Water Agency to submit its written report to the SWRCB by April 15. A copy of Mr. Herrera's March 30 letter is attached to this report as Exhibit 16.

This report contains the data and information that the Water Agency has been able to obtain and assemble in the limited time available.

III. Water Agency Contractors' Water Demands, Supplies, and Conservation

A. Present (1995-2004) and Projected (2020) Supplies and Demands

The Water Agency currently supplies Russian River water to the following 10 contractors: the Cities of Cotati, Petaluma, Rohnert Park, Sonoma and Santa Rosa, the Forestville, North Marin, Marin Municipal, and Valley of the Moon Water Districts, and the Town of Windsor. Total potable water use for these 10 contractors ranged from 84,245 to 103,510 acre-ft (AF) per year during the past nine fiscal years (Figure 1). Agency deliveries of Russian River water comprised approximately 60% of the total potable water use, with the remainder, labeled as "Other Potable Water" in Figure 1, coming from local supplies. Although total potable water use has generally increased since 1995-96, Agency deliveries of Russian River water have remained stable and savings through water conservation and urban recycled water use and use of water from other potable sources have increased (Figure 1). During 2003-04, the most recent fiscal year for which the Agency has records, water conservation and urban recycled water accounted for 10,764 AF or 11% of the total potable water use in the Agency's service area. Detailed water use records for all 10 contractors are attached to this report as Exhibits 17-28. (The methods that were used to estimate water conservation savings are described in Section III.B of this report.)

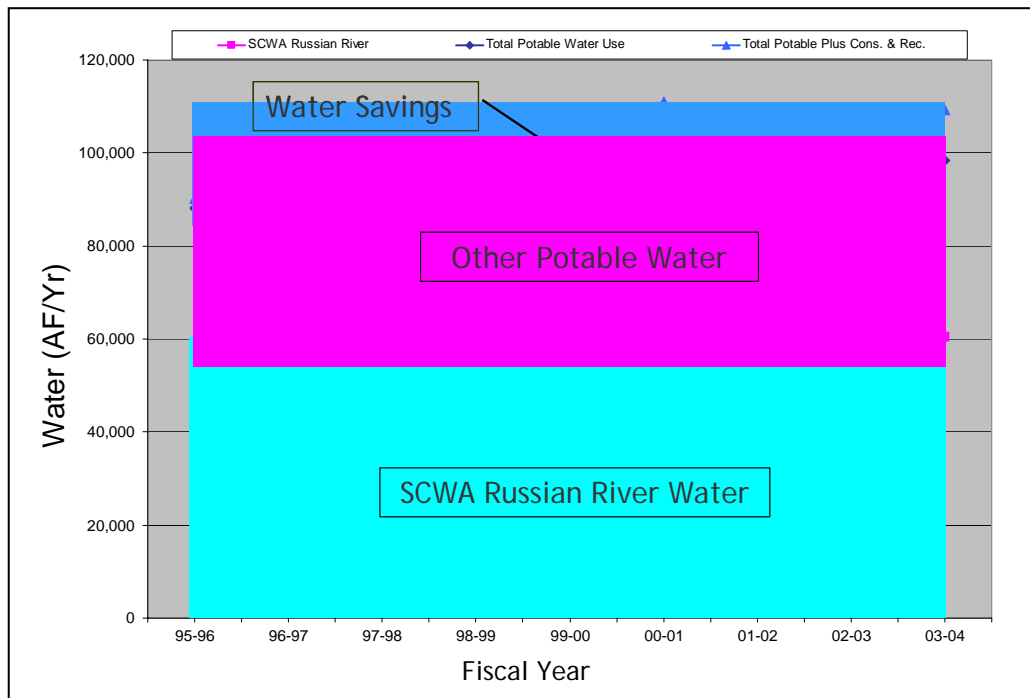


Figure 1. Total water use and water savings.

As shown in Figure 2, the California Urban Water Conservation Council reported a statewide mean per-capita water use of 196 gallons per day in 2001-02. With the exception of the City of Sonoma, all entities in the Agency's service area were below the state mean and, on average, per-capita use in the Agency's service area was nearly 40 gallons per-capita per day (GPCD) lower than the 196 GPCD state mean level (Figure 2).

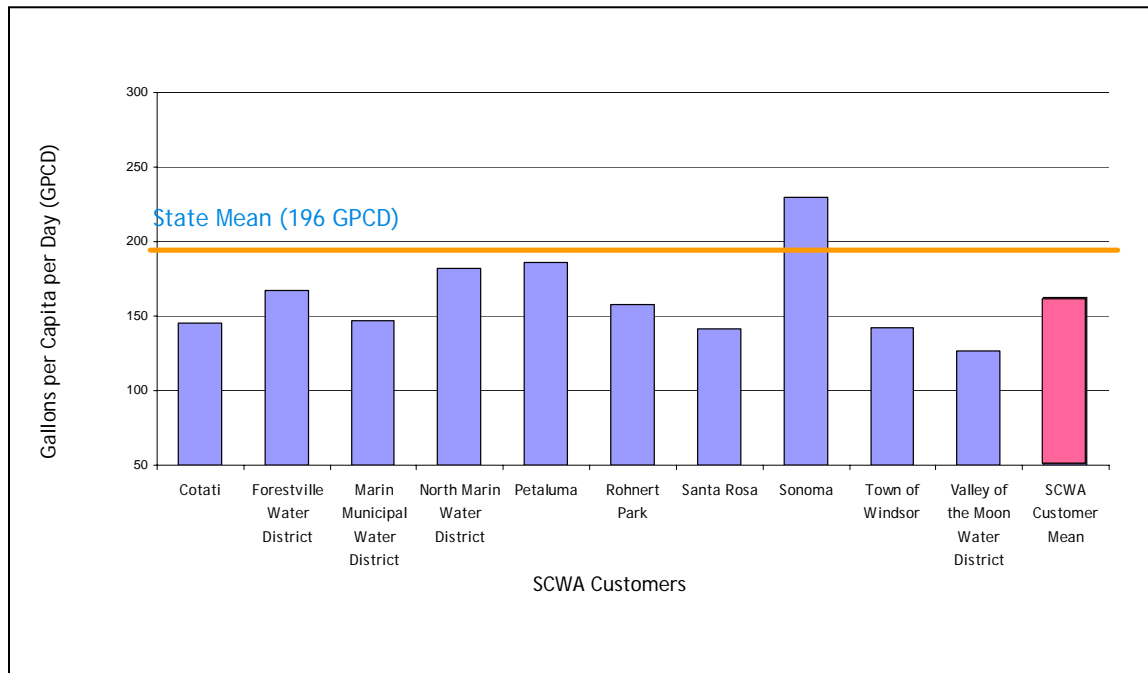


Figure 2. Per-capita water use.

From the 2000 Urban Water Management Plans of the Agency, Marin Municipal Water District, and Town of Windsor, total annual water demand of the Agency's ten contractors is projected to increase from approximately 100,000 AF in 2003-04 to 130,000 AF in 2019-20 (Figure 3). Agency Russian River water diversions are projected to increase by 25,000 to 30,000 AF/yr by 2019-20. Water conservation/urban recycled water currently reduce total demand by approximately 11%. If the same rate of water conservation/urban recycled water use occurs in the future, then the 130,000 AF projected demand in 2019-20 will include 14,000 AF/yr of water savings (Figure 3).

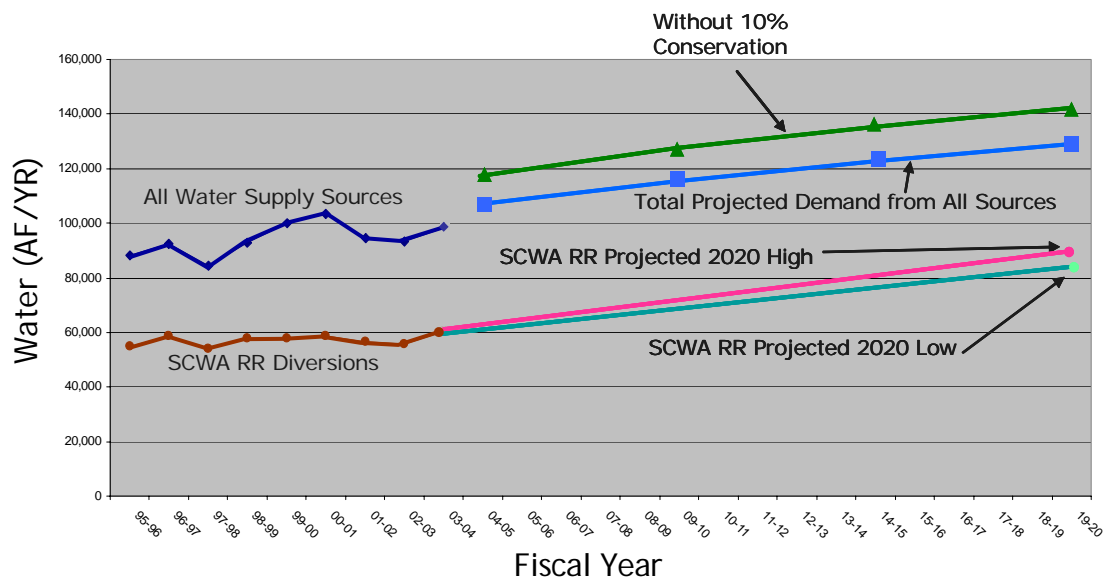


Figure 3. Historical and projected future demands.

B. Present (1995-2004) Water Conservation and Estimated Water Savings

The Agency and its contractors' water conservation program is an integral part of the Agency's regional water supply planning. The Agency and its contractors all are strongly committed to water conservation, and each executed the CUWCC Memorandum of Understanding Regarding Urban Water Conservation (MOU) some time between 1991 and 2002. CUWCC's goal is to integrate urban water conservation BMPs into the planning and management of California's water resources. The two primary purposes of the MOU are:

1. To expedite implementation of reasonable water conservation measures in urban areas;
and
2. To establish assumptions for calculating estimates of reliable future water conservation savings resulting from proven and reasonable conservation measures. Estimates of reliable savings are the water conservation savings that can be achieved with a high degree of confidence in a given service area.

By signing the CUWCC MOU, the Agency and its contractors all agreed to use their best efforts to implement the CUWCC's 14 water conservation BMPs, which address indoor and outdoor

water conservation in the residential, commercial, industrial and institutional sectors. Included in the CUWCC MOU is a definition of each BMP, a description of how the BMP should be implemented,¹ an implementation schedule, a description of the documentation that will be reported to the CUWCC, and water-saving assumptions. Exhibit 29 to this report contains abbreviated descriptions of the fourteen BMPs.

The CUWCC requires MOU signatories to report water conservation activities every two years, through the CUWCC online reporting website. The CUWCC uses the reported data to calculate water savings in each signatory's service area for each BMP for which water savings can be quantified (the "quantifiable BMPs"). The CUWCC hired an independent consultant to develop statewide standards for estimating the water savings that result from implementing each of the BMPs. The April 23, 2003 memorandum by M. Cubed, *BMP Reporting Database Water Savings Calculations*, describes how water savings are estimated from the seven quantifiable BMPs. A copy of this memorandum is attached to this report as Exhibit 30.

Each year, the Agency and its contractors review their compliance levels for each BMP. The level of compliance is calculated by CUWCC and is available to the MOU signatories through CUWCC Coverage Reports. The CUWCC Coverage Reports provide a detailed outline of the percentage that has been completed for each BMP.

Through the FY 2003/2004 reporting period, the Agency's contractors achieved calculated water savings of over 9,200 acre-feet per year from the 7 quantifiable CUWCC BMPs (Table 1). Exhibit 31 to this report lists these calculated water savings, by contractor and BMP.

¹"Implementation" means achieving and maintaining the staffing, funding, and the priority levels necessary to achieve the requirements set forth in each BMP definition, and to satisfy the commitment by the signatories to use good faith efforts to optimize savings from implementing BMPs as described in the CUWCC MOU.

Table 1. Agency contractors' water supplies and conservation.

Sources	Fiscal Year									
	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	03-04	Jul-Dec 04
SCWA Russian River	57,070	58,779	54,030	57,858	57,793	58,691	56,693	55,823	60,391	34,472
Other Potable	33,085	33,751	30,215	35,130	42,156	44,819	38,028	37,387	38,083	17,073
Total Potable Use	88,155	92,530	84,245	92,988	99,949	103,510	94,721	93,210	98,474	51,545
Urban Recycle	797	702	529	714	1,151	1,188	1,300	1,259	1,478	N.A.
BMPs	1,287	2,053	2,547	4,353	5,092	6,232	6,640	8,500	9,286	N.A.
%Recycle/ Conservation	2%	3%	4%	5%	6%	7%	8%	10%	11%	N.A.

These water savings do not include savings that result from the seven non-quantifiable CUWCC BMPs or from other regional and local water conservation measures that go beyond the 14 CUWCC BMPs. These other measures are described in Exhibit 32 to this report. Although the non-quantifiable CUWCC BMPs and the other measures that go beyond the CUWCC BMPs save water, the amounts of water savings from these BMPs and measures cannot be quantified because there are no credible studies completed to date that evaluate and quantify the water savings associated from implementing them. The following list identifies a few examples of non-quantifiable BMPs and programs that go beyond the 14 CUWCC BMPs and that are being implemented in the SCWA service area:

- A turf removal program, where customers are paid to remove turf grass and install water-efficient landscapes.
- Weather-based irrigation controller pilot programs to retrofit existing landscape irrigation controllers with new, self-adjusting weather-based irrigation controllers.

- A regionally oriented Water-Wise Gardening CD that describes water savings tips, landscaping design tips, and low-water-use plant lists for water-efficient residential landscapes.
- Mandatory plumbing fixture retrofits on resale and at times of water service changes (low-flow toilets, low-flow showerheads and sink aerators).
- Requirements for front-loading horizontal-axis washing machines in new developments.
- Conservation incentive rates and tiered rates, implemented to cause water savings.
- Landscape limitations for new developments.

C. Projected Future Amounts of Water Conservation and Estimated Water Savings

The Water Agency and its contractors have prepared regional UWMPs since 1985. The Water Agency's 2000 UWMP discusses water supplies and demands, reliability planning, water shortage contingency planning, wastewater treatment and recycling, and water conservation activities.

To prepare its 2005 UWMP, the Water Agency and its contractors began a process in November 2004 to estimate future demands. This process will include analyses of the following:

- Future demands with all 14 CUWCC BMPs being fully implemented.
- Future water savings for measures beyond the 14 CUWCC BMPs.
- Cost-benefit analysis for each conservation measure beyond the 14 CUWCC BMPs.

These additional analyses will utilize Maddaus Water Management's *Least Cost Planning Decision Making Support System* (DSS model). The DSS model has been endorsed by CUWCC and is an acknowledged water management tool. A description and schematic of this model are attached as Exhibit 33. When these analyses are completed, the Agency will be able to accurately state projected water savings from implementing the CUWCC BMPs and other water conservation measures. New and innovative ideas and technologies are being evaluated to

determine the feasibility of new water conservation measures. The Agency will continue to establish new water conservation programs to promote water conservation throughout its service area.

The Agency estimates that future water conservation programs will yield water savings of at least 10% of the Agency contractors' total future projected demand. This estimated percentage is based on the Agency contractors' percentage water savings in 2003/2004. When the Agency's 2005 UWMP and demand and conservation analyses are completed, the Agency will have better estimates of future water savings in the Agency's service area.

D. Present and Future Expenditures for Water Conservation

The Agency's water conservation and water reuse programs are self-sustaining. The Agency is co-funding and plans to continue to co-fund local and regional water conservation programs at a rate of \$2 million per year over a ten-year period. The funds in this budget are distributed to the Agency's contractors in proportion to their water allocations. Through individual agreements, a total of \$1.5 million per year goes directly to the Agency's contractors to help fund their costs of implementing CUWCC BMP water conservation measures, and the remaining \$0.5 million per year funds the Agency's regional water conservation program. In addition, each Agency contractor may supplement these funds from its own local funding sources. The Agency's funding of the current water conservation plan began in FY 1997/1998 and will continue through at least FY 2007/2008. The Agency's contractors are committed to water conservation beyond FY 2007/2008 and many have identified funding that equals or exceeds current expenditure levels.

The Agency plans to co-fund water conservation measures that go beyond the fourteen CUWCC BMPs, to develop recycled water projects that offset potable water use, and to develop standby local peak-month production capacity that reduces demand on the Agency's water transmission

system. The Agency and its contractors have budgeted \$13 million over the ten-year period from 2001/2002 through 2011/2012 for this program.

The Agency and its contractors regularly apply for state grant funds, National Aeronautic Space Administration grants, and California Public Utility Commission funds to help offset the cost to implement water conservation programs. Grant funds of \$1.3 million have helped fund installations of new water meters, installations of restaurant pre-rinse nozzles, washing machine rebate programs, weather-based irrigation controller programs and the measurements of landscape areas using satellite imagery.

The attached Exhibit 34 lists the money spent to date and the projected future spending for water conservation programs through FY 2019/2020, with the following exceptions: the City of Cotati's future expenditures are only through FY 2007/2008; the Town of Windsor's and the Forestville Water District's future expenditures are only through FY 2004/2005; Marin Municipal Water District's past and future expenditures are not included in this table.

IV. Agricultural Water Use In Russian River Watershed In Sonoma County

When the SWRCB issued Order WR 74-30, it ruled that third parties may obtain their own permits to appropriate water from the 10,000 acre-foot-per-year reservation of Coyote Valley Dam Project water for beneficial uses in the Russian River Valley in Sonoma County. (See Order WR 74-30, pp. 11, 13; this reservation originally was made in Decision 1030; see D-1030, pp. 46-47.) Agricultural water users in Sonoma County that divert water from the Russian River therefore divert both natural-flow water and Russian River Project water under their own water rights, and these water users do not have any contractual relationships with the Agency. Also, there are no large irrigation districts in Sonoma County, and the Agency does not supply any significant amounts of water through Agency facilities to agricultural water users, so there is no publicly available information regarding agricultural water use in Sonoma County. For these reasons, the Agency can only provide the following summary regarding agricultural water use in the Russian

River watershed.

Table 2 shows the Agency's estimates of the numbers of acres of vineyards and other crops in the three main Sonoma County agricultural regions in the Russian River watershed: the Alexander Valley, the Dry Creek Valley, and the Santa Rosa Plain. The table also lists the corresponding estimated total applied water use for each of these crop acreages and the amounts of the recycled water that are used to irrigate these crop acreages. The acreages were estimated from a variety of public sources, including Sonoma County land use records, aerial photos, the State Department of Water Resources, State Water Resources Control Board, and local cities. The crop distribution for the Santa Rosa Plain is assumed to be half vineyards and half other crops. The estimated amounts of water use for vineyards in the table are based on a water duty of approximately 1 acre-foot of applied water per acre. This estimate is based on the assumptions that, under average conditions, about 4 inches of water are used for frost protection, about 6 inches of water are used for pre-harvest irrigation, and about 2 inches of water are used for post-harvest irrigation. Crops listed under the heading "Other Crops" are mostly pasture, hay, and various types of orchard crops. It is assumed that these crops require an average of 3 acre-feet of applied water per acre. This assumption was based upon estimated water duties for those crops in the North Coast Region prepared by the State Department of Water Resources for the California Water Plan Update. The amounts of recycled water use shown in these tables are derived from data for the Santa Rosa Subregional Wastewater Treatment System, Town of Windsor, and Airport wastewater treatment plants.

Table 2. Agricultural acreage, total water use, and recycled water use in the Alexander Valley, Dry Creek Valley, and Santa Rosa Plain.

Crop	Acreage	Water Use (AF/yr)	Recycled Water Use (AF/yr)
Alexander Valley			
Vineyards	12,000	12,000	0
Other	4,000	12,000	0
Total	16,000	24,000	0
Dry Creek Valley			
Vineyards	6,300	6,300	0
Other	N.A.	N.A.	N.A.
Total	6,300	6,300	0
Santa Rosa Plain			
Vineyards	8,000	8,000	2,564
Other	8,000	24,000	5,265
Total	16,000	32,000	7,829

V. Projected Increases In Russian River Diversions and Projected Levels Of Water Conservation

In his February 2, 2005 letter, Mr. Herrera asked the Agency to “provide the SWRCB with a detailed plan of water conservation efforts that will offset future increases in demand, which in turn will result in no increase in Russian River diversions.”

The Agency has estimated that by 2020 it will need to divert an additional 25,000 to 30,000 acre-feet of water annually from the Russian River at its Wohler-Mirabel diversion facilities, and release additional water from Lake Sonoma to support this additional diversion, to supply projected increases in its contractors’ demands (Figure 4). This additional diversion amount was estimated from the 2000 UWMP’s of the Agency, MMWD, and Town of Windsor, and it includes reductions in demands because of projected water conservation savings and urban recycled uses. To prevent all of these projected increases in the Agency’s diversions, the Agency’s contractors would have to reduce their projected demands by 20 to 25 percent, by implementing substantial conservation measures beyond those that already are included in the 2000 UWMP demand projections, or by obtaining water from alternate supplies.

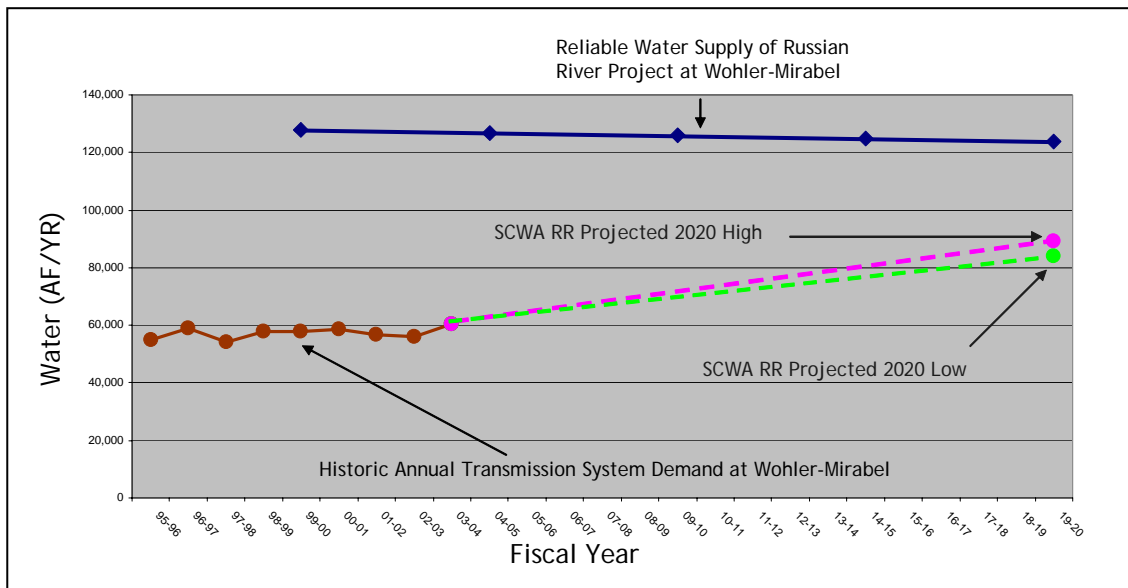


Figure 4. Agency’s projected demands and supplies.

A plan that would require such high levels of additional water conservation or such additional supplies would not be necessary for several reasons. First, such high levels of conservation probably are not sustainable or cost-effective. Second, the Agency has adequate water supplies to meet the projected increases in demand without its contractors needing to implement such high levels of additional conservation or needing to use alternate supplies. Third, no substantial hydrological or environmental benefits would result from such a plan. In fact, adverse impacts to other resources, like groundwater resources, could result if the Agency were not allowed to increase its Russian River diversions and re-diversions.

A. The Additional Water Conservation Measures That Would Be Required Probably Are Not Sustainable or Cost-Effective

The types of measures that would be necessary to achieve an additional 20 to 25 percent of conservation savings are the types of measures that normally are implemented only during times of severe droughts or other water-shortage emergencies. In an effort to create a regional response to water shortage in the Agency's service area, the contractors cooperated with one another to draft and implement a model Water Shortage Emergency Ordinance or similar ordinance. Stage 2 of their rationing plan requires mandatory rationing with the goal of reducing overall water use by 25% to 65% and specific measures for success. The specific measures in their plan that would be implemented may include: (1) reducing all "irrigation only" uses by at least 34% of the amounts normally used by the same customers; (2) reducing all residential uses besides "irrigation only" uses by at least 50% of the amounts normally used by the same customers; (3) prohibiting all or almost all watering of any existing turf grass, ornamental plants, gardens, landscaped areas, trees, shrubs and other plants, except watering from hand-held hoses, containers or drip irrigation systems; (4) prohibiting all watering of new turf grass or replacement turf grass; (5) prohibiting all initial fillings of swimming pools for which construction-permit approvals were issued after a specific date; and (6) prohibiting all serving of drinking water to customers at restaurants, cafés, cafeterias and other public places where food is served, except where a patron expressly asks for it.

The majority of savings associated with these types of measures rely on consumers changing their water-use habits. While most consumers are willing to accept such measures during severe droughts or other water-shortage emergencies, most consumers generally are not willing to continue to accept such measures after the drought or other emergency has ended. For this reason, and because these measures do not rely on any changes in fixtures or other installed devices, the savings gained from these measures normally diminish over time and are not sustainable in the long-term. As was noted by the American Water Works Association when reviewing Marin Municipal Water District's experience after the 1976-1977 drought: "The drought was followed by a wet period and, combined with new growth in the district, before long consumption rebounded to pre-drought levels and above." (American Water Works Association "Drought Management Handbook" page 103.) In 2003-2004, the City of Los Angeles Department of Water and Power (LADWP) supplied 690,450 acre-feet (AF) of water, a 4% increase from the prior year's usage of 663,625 AF. LADWP's water deliveries have been increasing since the end of water rationing in 1992 and now are nearly equal to pre-drought level. (See LADWP's Urban Water Management Plan, Fiscal Year 2003-2004 Annual Update.)

The measures that would be necessary to achieve this high level of additional conservation also would probably not be cost-effective. For example, as shown in Exhibit 35, the cost per unit of water saved normally increases substantially as a conservation measure is implemented. The City of Santa Rosa found that the cost per acre foot to implement a successful residential toilet replacement program increased from \$1,634 in 1992 to \$9,381 in 2002. The City of Santa Rosa offered a number of toilet replacement programs (rebates, free toilets through school distribution and finally free direct toilet installation by plumbers) to encourage new participants who would voluntarily replace their high flow toilets with 1.6 gallon per flush ultra low flush toilets. Because the Agency and its contractors already are committed to implementing all cost-effective water conservation measures, the very large effort that would be required to achieve an additional 20 to

25 percent of water conservation savings, above existing conservation savings, would not likely be cost-effective.

B. The Agency Has Adequate Supplies To Meet Projected Increases In Demands

The Agency is the local sponsor of the Coyote Valley Dam/Lake Mendocino Project and the Warm Springs Dam/Lake Sonoma Project, which together are known as the Russian River Project (Figure 5). The Agency paid the U.S. Army Corps of Engineers approximately \$5,000,000 (in 1955 dollars) for the water supply benefits of the Coyote Valley Dam Project, and the Agency is paying the Corps of Engineers a total of almost \$100,000,000 for the water supply benefits of the Warm Springs Dam Project. These amounts have been and are being funded through property taxes paid by the residents of Sonoma County and through water charges paid by the customers of the North Marin and Marin Municipal Water Districts.

Both Lake Mendocino and Lake Sonoma have dedicated flood-control pools and water supply pools. The right to store water in the 70,000 AF water supply pool in Lake Mendocino is shared between the Agency and the Mendocino District under Water Right Permits 12947A and 12947B (Application 12919A). (Water users in the Russian River Valley in Sonoma County also have rights to divert and use up to 10,000 AF per year of Coyote Valley Dam Project water. See D-1030, pp. 46-47; Order WR 74-30, pp. 11, 13.) The Agency's right to store 212,000 AF of water in Lake Sonoma is authorized by the Agency's water-right Permit 16596 (Application 19351).

The estimated reliable water supply yield of the Russian River Project at the Agency's Wohler-Mirabel diversion facilities is approximately 124,000 AF per year. The Agency's Russian River diversions in 2020 at Wohler-Mirabel are estimated to be between 85,000 and 90,000 AF per year. A comparison of supplies versus projected diversions is presented in Figure 4. This Figure shows that the Agency will have adequate water supplies to meet its contractors' projected 2020 demands. Thus, while the Agency and its contractors are implementing cost-effective water conservation measures now and are committed to continuing to implement these and other cost-

effective measures in the future, it would not be appropriate to require the Agency's contractors to implement non-sustainable or non-cost-effective water conservation measures or develop alternate supplies, or for the customers of these contractors to bear the economic impacts of such measures when the Agency has adequate water supplies for its projected Russian River diversions at its Wohler-Mirabel facilities.²

C. Effects Of Additional Water Conservation On Russian River Hydrology

The Agency controls releases from Lake Mendocino and Lake Sonoma when the water surface elevations in these reservoirs are in their water supply pools. (The U.S. Army Corps of Engineers controls releases from these reservoirs when their water surface elevations are in the flood-control pools.) During water supply operations, the Agency must release sufficient water from Lake Mendocino to satisfy diversions of water from the Russian River mainstem between Lake Mendocino and Healdsburg and to meet the minimum instream flow requirements in the Russian River at Healdsburg that the SWRCB imposed in the Agency's water-right Permit 12947A through D-1610. The Agency must operate this section of the Russian River as an independent system, because flows in this reach are not affected by any releases of water from Lake Sonoma.

The Agency does not operate Lake Mendocino to satisfy any diversion demands or instream-flow requirements downstream of Healdsburg. Instead, all such demands and requirements are satisfied only by releases from Lake Sonoma (which flows down Dry Creek and then into the Russian River just downstream of Healdsburg) and by water that flows in the Russian River past Healdsburg after meeting the Healdsburg instream flow requirements.

Because no additional water is released from Lake Mendocino for diversions by the Agency downstream of Healdsburg, Lake Mendocino storage levels and flows in the Russian River between Lake Mendocino and Dry Creek will not be affected by any changes in the Agency's

²Because the Agency has paid for and now has rights to the water supply benefits of these two reservoirs, the Agency is in a very different water supply situation than other water users in the Russian River watershed that have not developed adequate water supply facilities or do not have sufficient water rights.

diversions from Russian River at its Wohler-Mirabel facilities. The February 1986 SWRCB's staff analysis recognized this, stating: "Conservation of water in SCWA's service area will have minimal impact on flows in the critical reach of the Russian River between the Forks and Dry Creek, since required minimum flows in this reach, rather than SCWA's diversions, will be controlling during the summer months. Of more importance in this reach of the river is use of water by diverters along the river, over which SCWA has no control." (See SWRCB Staff Analysis for Application 19351 (Unapproved Portion) and Petitions on Permitted Applications 12919A, 15736, 15737 and 19351, vol. II, p. 50.)

The Agency's general operating rule for Lake Sonoma is to release any additional water that is needed to satisfy demands for diversions from the Russian River downstream of Healdsburg and to meet the minimum instream-flow requirements in the Russian River at the Hacienda Gage. Thus, if future projected increases in the Agency's demand for diversions at its Wohler-Mirabel facilities were eliminated because of additional levels of water conservation, then the Agency would not have to make additional releases of water from Lake Sonoma. As a result, carryover storage in Lake Sonoma would not be reduced and flows in Dry Creek and the Russian River between Healdsburg and Wohler-Mirabel would not increase. The SWRCB's February 1986 staff analysis recognized this point: "It should be pointed out that any saving of water through water conservation in SCWA's service area will mainly be reflected in the amount of storage remaining in Lake Sonoma, since under the proposed coordinated operation of Lake Mendocino and Lake Sonoma, required lower Russian River needs, including SCWA's diversions, will be furnished from Lake Sonoma." (*Id.*, p. 49.)

Whether or not the Agency's diversions at Wohler-Mirabel increase, flows in the lower Russian River downstream of Wohler-Mirabel will not be affected, because, regardless of the level of the Wohler-Mirabel diversions, the Agency will operate its releases from Lake Sonoma to meet the minimum Russian River instream-flow requirements at the Hacienda Gage. The Hacienda Gage is located downstream of the Agency's diversion at Wohler-Mirabel (Figure 5).

D. Eliminating Any Increases In The Agency's Wohler-Mirabel Diversions May Result In Other Adverse Impacts

The Agency has identified the need to divert an additional 25,000 to 30,000 acre-feet per year of water by 2020. If the Agency were not able to make these increased diversions, then, while the Agency's contractors might impose strict water conservation requirements, it is very likely that the contractors also would begin to pump more groundwater to attempt to meet their customers' increasing demands.

This greater reliance on groundwater could have adverse impacts on groundwater resources. Specifically, there is clear evidence that there is a connection between local groundwater levels and the amounts of water supplied by the Agency in the Agency's service area. Figure 6 shows the correlations between the Agency's deliveries of surface water and groundwater pumping levels in the Rohnert Park/Cotati area. This Figure shows that there were steady declines in groundwater elevations from 1970 to the late 1980s in this area. These declines coincided with increased groundwater pumping in the area. As the Agency began to supply more water to this area in the late 1980s, groundwater pumping leveled off and groundwater elevations stabilized. Preventing any increases in the Agency's Wohler-Mirabel diversions probably would reverse the trend shown in Figure 6. If additional groundwater pumping were to occur in this area in the future because of limitations on the Agency's Wohler-Mirabel diversions, and therefore on its deliveries of water to its contractors, then groundwater levels in this area probably would once again begin to decline.

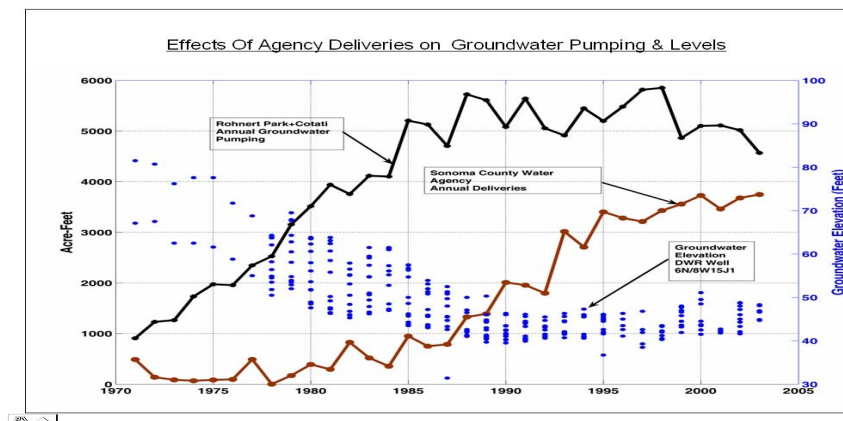


Figure 6. Effects of Agency deliveries on groundwater pumping and levels.

VI. Conclusion

As discussed in this report, projected population increases in the Water Agency's service area will require the Agency to increase its diversions of water from the Russian River at the Agency's Wohler-Mirabel facilities above present levels, even if all cost-effective water conservation measures are implemented. Because the Agency has sufficient water supplies for these projected increased diversions, it is not necessary and would not be appropriate to require the Agency, its contractors and their customers to implement the severe drought-response measures that would be required in all years if the Agency were prohibited from increasing its Russian River diversions above present levels or to suffer the economic impacts of such measures. The Agency and its contractors are implementing an aggressive water conservation plan, and they plan to implement all cost-effective water conservation measures in the future.